

REMARKS

The Office Action dated May 24, 2007, has been received and carefully noted. The following remarks are submitted as a full and complete response thereto. Claims 1-5 are pending and respectfully submitted for consideration.

Rejections Under 35 U.S.C. § 103

Claims 1-5 were rejected under 35 U.S.C. § 103(a) as being obvious over [Takashi] Kano et al. (U.S. Patent No. 6,783,728 B2, "Kano"). The Applicants traverse the rejection and respectfully submit that claims 1-5 recite subject matter that is neither disclosed nor suggested by Kano. Claims 2-5 depend from claim 1.

Claim 1 recites a steel for machine structural use having excellent chip-breakability, comprising alloying elements necessary for a machine structural steel except for Pb and Bi, at least five MnS-inclusion particles having averaged particle size of 1.0 μm or more existing per mm^2 per S-content 0.01%. In the microscopic field, the condition ($\text{area } [\mu\text{m}^2]/\text{aspect ratio} \geq 10$) being met, the area percentage of Ca-containing sulfide inclusion particles containing at least 1.0wt.% of Ca being in the range of 15 - 40% of the area of all the sulfide inclusion particles. A film of sulfide inclusion particles is formed on the tool surface during turning thereby to minimize curl diameter of chips.

The Applicants respectfully submit that Kano fails to disclose or suggest the features of the invention as recited in claim 1. In particular, Kano does not disclose or suggest at least five MnS-inclusion particles having averaged particle size of 1.0 μm or more existing per mm^2 per S-content 0.01%. In contrast, Kano merely discloses that manganese is an essential element to form sulfides. Mn-content less than 0.1% gives insufficient amount of sulfides while an excess amount more than 3.5% hardens the

steel to decrease machinability. Kano also discloses that there is sulfur of at least 0.01% added. See column 3, lines 8-16 of Kano. Kano further discloses that the inclusion has a double structure, and EPMA analysis revealed that the core consists of oxides of Ca, Mg, Si and Al, and the core is surrounded by MnS containing CaS. The area in microscopic field occupied by the sulfide inclusions containing Ca of 1.0% or more neighboring to the oxide inclusions containing CaO of 8-62%: $2.0 \times 10^{-4} \text{ mm}^2$ or more per 3.5 mm^2 . See column 7, lines 44-47 of Kano. The Applicants respectfully submit that there is no disclosure or suggestion in Kano of the area [μm^2]/aspect ratio ≥ 10 being met. As such, Kano fails to disclose or suggest the features of the invention as recited in claim 1.

To establish a *prima facie* case of obviousness, each and every feature of a rejected claim must be taught or suggested by the applied art of record. See M.P.E.P. § 2143.03.

In view of the above, the Applicants respectfully submit that Kano fails to support a *prima facie* case of obviousness for purposes of a rejection of claim 1 under 35 U.S.C. § 103. Accordingly, claim 1 is not rendered obvious in view of Kano and should be deemed allowable.

Claims 1-5 were rejected under 35 U.S.C. § 103(a) as being obvious over Hayaishi et al. (U.S. Patent No. 6,764,645 B2, "Hayaishi").

The Applicants respectfully submit that Hayaishi is not a proper reference under any section of 35 U.S.C. § 102, and therefore, cannot be used in a rejection under 35 U.S.C. § 103. The present application was filed in the United States on February 9, 2005 and has an effective U.S. invention date of August 9, 2002, based upon Japanese

Patent Application No. 2002-232425. The Hayaishi reference was issued as a patent on July 20, 2004 and has an effective U.S. filing date of November 27, 2002. Therefore, the Applicants submit that Hayaishi is not a valid reference under 35 U.S.C. § 102, because the U.S. filing date of Hayaishi is after the earliest effective invention date of the present application. In support of the Applicants' claim to priority, the Applicants submit herewith a verified translation of the priority document, Japanese Patent Application No. 2002-232425. As such, the Applicants respectfully request withdrawal of the rejections of claims 1-5 in view of Hayaishi.

Double Patenting Rejections

Claims 1 and 2 were rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,764,645.

Claim 3 was rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 7 of U.S. Patent No. 6,764,645.

Claim 4 was rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 5 of U.S. Patent No. 6,764,645.

Claim 5 was rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 6 of U.S. Patent No. 6,764,645.

The Applicants respectfully traverse the rejections. However, in order to expedite prosecution and place the application in condition for allowance, the Applicants submit herewith the attached Terminal Disclaimer for U.S. Patent No. 6,764,645 executed by an officer of the assignee.

The Applicants submit that the Terminal Disclaimer is in compliance with 37 C.F.R. § 1.321(d) and overcomes the non-statutory obviousness-type double patenting

rejections of claims 1-5. The Applicants also submit that claims 1-5 recite subject matter that is neither disclosed nor suggested by the cited prior art, and therefore, the claims are rendered non-obvious to a person of ordinary skill in the art. Accordingly, the Applicants respectfully request that the double patenting rejection be withdrawn.

Conclusion

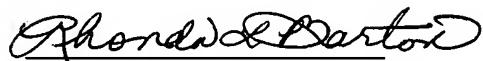
The Applicants respectfully submit that claim 1 is allowable. Claims 2-5 depend from claim 1. The Applicants further submit that claims 2-5 incorporate the patentable aspects thereof, and are therefore allowable for at least the same reasons as discussed above. Accordingly, the Applicants respectfully request withdrawal of the rejections, allowance of claims 1-5 and the prompt issuance of a Notice of Allowability.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper,

may be charged to counsel's Deposit Account No. 01-2300, referencing Attorney Dkt. No. 100193-00001.

Respectfully submitted,



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Enclosures: Terminal Disclaimer
Verified Translation of the Priority Document
Petition for Extension of Time (three months)